

REMARKS

Claims 1-17, 19-34, 36-43 and 45 were presented and examined. In response to the Office Action, Claims 1-17, 19, 36-44 and 45 are amended, and no claims are added or cancelled. Claims 1-17, 19-34, 36-43 and 45 remain in the Application. Reconsideration of the pending claims is respectfully requested in view of the following remarks.

I. Examiner Interview Summary

Applicant's representative, Tong Lee, conducted an Examiner Interview on December 18, 2008 by telephone to discuss proposed amendments to independent Claims 1, 19, 36. Applicant's representative explained that the claimed invention is related to generating new sound, using a novel setup of a model string. The equations are merely used as a tool for calculating the string movement based on the novel setup of the model string. The Examiner suggested that "for creating a musical sound" be added to the preamble of Claims 1 and 19, and "a fixed end" be added to the first element of Claims 1, 19, 36. The Examiner indicated that the claims, as amended, should be allowable.

II. Double Patenting Rejection

Claims 1-17, 19-34, 36-43 and 45 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-30 of U.S. Patent Application No. 10/949,464, which has been issued into a patent (U.S. Patent No. 7,381,881) on June 3, 2008, and has the same assignee as the present application.

Applicant submits that the claims of the conflicting patent and the current application, as amended, include distinct features. For example, independent Claims 1, 19 and 36, as amended, include the element of "simulating a force exerted by a stream of a fluid medium flowing in a direction along a longitudinal axis of the string." By contrast, Claim 1 of the conflicting patent recites a stream of a fluid medium flowing relative to the string in a direction having a component in a third direction orthogonal to both the first and second directions." Accordingly, withdrawal of the double patenting rejection is respectfully requested.

However, Applicant reserves the opportunity to file any appropriate response (e.g., a terminal disclaimer) in the event that the pending claims are otherwise allowable.

III. Claims Rejected under 35 U.S.C. §112

Claims 1-17 and 19-34 are rejected under 35 U.S.C. §112 as failing to comply with the enablement requirement. Specifically, the Examiner indicates that the claims mix real and simulated phenomena, and that a real sound cannot be created by just simulating the vibration of a string. Applicants amend independent Claims 1 and 19 to more clearly point out the “simulating” and “calculating” operations in relation to the creation of a musical sound by a sound generating device. It is commonly known in the art that a sound generating device can generate a real sound based on a representation of a sound. Thus, amended Claims 1 and 19, as well as their respective dependent claims (Claims 2-17 and 20-34) comply with the enablement requirement. Accordingly, withdrawal of the §112 rejection is requested.

IV. Claims Rejected Under 35 U.S.C. §101

Claims 1-17 and 19-34 are rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter. The Examiner indicates that the claims are directed to mathematical algorithms with no practical application. Further, the Examiner indicates that independent Claim 1 is not statutory for the following reasons: it is not a proper process claim, is directed to abstract ideas (namely, mathematical algorithms), and pre-empts the use of the claimed formulas. Independent Claim 19, which is a computer product claim, is rejected for similar reasons.

Without conceding the propriety of the rejection, Applicant amends independent Claims 1 and 19 to include the element of creating a musical sound by a sound generating device based on the representation. Creation of a musical sound is a practical application. Further, contrary to the Examiner’s assertion that Claim 1 does not recite a particular machine and the machine is incidental to carrying out the claimed method, the recited musical sound is created by a sound generating device, which is a specific machine and is not incidental to, but an integral part of, the claimed method of sound creation.

The Examiner also asserts that the recited sound creation is an intended use for a mathematical algorithm, namely, the algorithms corresponding to solving for forced vibration of a string. Without conceding the propriety of this assertion, Applicant amends Claims 1 and 19 to more clearly point out the operations of setting up a model string for creating a new sound. The operations include exciting a moveable end of the string from a rest position with turbulence and applying a longitudinal force on the string. A mathematical algorithm is merely a tool for solving

the novel setup of the model string. The mathematical algorithm cannot be used to set up a model string, such that the model string can be excited from a rest position, generate a self-sustained vibration under a longitudinal force, and be used to create a musical sound. The claimed method is not an intended use for mathematical algorithms per se. Instead, the claimed method is a novel method for setting up a model string and creating a sound using that model string, the vibration of which can be calculated by the algorithms.

Finally, the Examiner asserts that the claims pre-empt the use of the equation itself. As Applicant pointed out above, the claimed method calculates the movement of a model string with equations. However, the claimed method also includes operations to setup the model string for sound creation. The claimed method does not seek protection for any equation in the abstract. Instead, the claimed method seeks protection for generating a new musical sound, which is not abstract but has practical applications.

For at least the foregoing reasons, Applicant submits Claims 1 and 19, as well as their dependent claims, are directed to statutory subject matter. Accordingly, withdrawal of the §101 rejection of Claims 1-17 and 19-34 is requested.

V. Claims Rejected Under 35 U.S.C. §102(b)/103

Claims 1-17, 19-34, 36-43 and 45 stand rejected under 35 U.S.C. §102(b)/103 as being clearly anticipated by Sapp, *Research on the Synthesis of Natural Sounding Sounds*, ISBN-10:3-8265-9318-9 (“Sapp”) or, in the alternative under 35 U.S.C. §103(a) as obvious over Sapp in view of Chin et al., *A numerical model of a towed cable-body system*, Anziam J. 42 (E) pp. C362-C384, 2000 (“Chin”).

Independent Claims 1, 19 and 36, as amended, include the elements of:

- “...simulating a turbulence to excite the moveable end of the string from a rest position;
- simulating a force exerted by a stream of a fluid medium flowing in a direction along a longitudinal axis of the string;
- calculating a self-sustained vibration of the string in response to the turbulence and the force;
- calculating a representation of a sound based on the self-sustained vibration; and
- creating the musical sound by a sound generating device based on the representation.”

None of the cited references disclose these limitations. In the rejection, the Examiner relies on the background section of the present application (“Sapp”). Sapp describes a number of methods for generating sounds on a string. For example, one method is to pluck a string, in which a decayed sound is produced. A decayed sound is not a self-sustained vibration. Another method is to bow a string, in which the bow moves in the plane of vibration of the string. The movement of the bow is not along a longitudinal axis of a string. None of the disclosed methods can be used to generate the claimed musical sound, which is generated from a self-sustained vibration of a string under a longitudinal force. The claimed invention generates a new musical sound that is distinct from the sounds generated by the conventional methods. As recited in Claim 1, the string is under a longitudinal force. To move the string from an initial rest position, a moveable end of the string is excited with turbulence. These limitations are not arbitrary boundary conditions of an equation, as asserted by the Examiner. Rather, these limitations are the novel operations that set up a model string for creating a new sound. The equation and its boundary conditions are merely a tool for calculating the string movement based on the novel setup.

Chin is relied on for disclosing the movement of a cable that connects a body and an airplane. Chin is non-analogous art because it is totally unrelated to sound generation.

Therefore, amended Claim 1 and its dependent claims are neither anticipated by Sapp nor obvious over Sapp in view of Chin.

Analogous discussions apply to independent Claims 19 and 36, which are amended to include similar limitations. Their dependent claims are patentable by virtue of dependency. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejections of Claims 1-17, 19-34, 36-43 and 45 under 35 U.S.C. §102(b)/103.

CONCLUSION


In view of the foregoing, it is believed that all claims are now in condition for allowance and such action is earnestly solicited at the earliest possible date. If there are any additional fees due in connection with the filing of this response, please charge those fees to our Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

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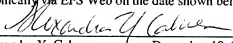
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